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PATENT  
BDL24

#2

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Brian Charles PIKE  
Appl. No.: 09/725,466 Group: 3721  
Filed: November 30, 2000 Examiner: UNASSIGNED  
For: CARTON FILLING DEVICES

L E T T E R

Assistant Commissioner for Patents  
Washington, DC 20231

Date: March 14, 2001

Sir:

Under the provisions of 35 U.S.C. § 119 and 37 C.F.R. § 1.55(a), the applicant(s) hereby claim(s) the right of priority based on the following application(s):

<u>Country</u>	<u>Application No.</u>	<u>Filed</u>
UNITED KINGDOM	9928230.3	December 1, 1999

A certified copy of the above-noted application(s) is(are) attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fee required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

YOUNG & THOMPSON

By

  
Robert J. Patch, #17,355

745 South 23<sup>rd</sup> Street, Suite 200  
Arlington, Virginia 22202  
(703) 521-2297

RJP:mdp  
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Attachment

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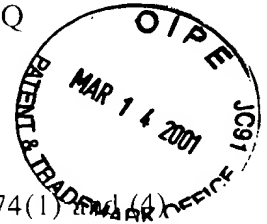
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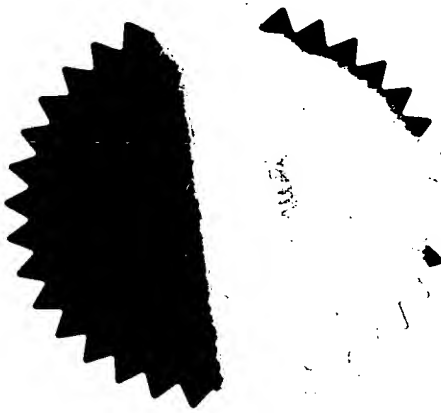


I, the undersigned, being an officer duly authorised in accordance with Section 74(1) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.



Signed

Dated

*P. Mahoney*

03 JAN 2001

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THE PATENT OFFICE  
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The  
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01DEC99 E495585-6 D01559  
P01/7700 0.00-9928230.3

# Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road  
Newport  
Gwent NP9 1RH

1. Your reference

MJ/CS/BDL.24

2. Patent application number

(The Patent Office will fill in this part)

9928230.3

3. Full name, address and postcode of the or of each applicant (underline all surnames)

Bradman Lake Limited  
Yelverton Road,  
Brislington,  
Bristol BS4 5HP  
United Kingdom

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

6331011001  
United Kingdom

4. Title of the invention

Robotic End-Loader

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Wynne-Jones Laine & James,  
22 Rodney Road,  
Cheltenham,  
Gloucestershire  
GL50 1JJ  
United Kingdom

Patents ADP number (if you know it)

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
  - b) there is an inventor who is not named as an applicant, or
  - c) any named applicant is a corporate body.
- See note (d))

# Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description 3

Claim(s) ~~1~~

Abstract

Drawing(s) 4 44 

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

Date 30.11.99

WYNNE-JONES LAINE & JAMES

12. Name and daytime telephone number of person to contact in the United Kingdom

Mr. M. J. G. James

01242 515807

## Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

## Notes

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.
- Write your answers in capital letters using black ink or you may type them.
- If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
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- For details of the fee and ways to pay please contact the Patent Office.

"Improvements relating to Carton Filling Devices"

This invention is concerned with means for inserting objects being carried on a conveyor into cartons which move along with the conveyor. A standard mechanism for this purpose has a series of pushers which are moved across the conveyor to move objects into the respective cartons, the pushers then being carried around to the start end of the conveyor to locate on to further objects to be inserted. This mechanism has a large number of moving parts (in view of the fact that several independent moving pushers are employed) and occupies a substantial width to one side of the conveyor, for location of the extended pushers.

According to the present invention there is provided a carton filling device comprising a conveyor for moving cartons and objects to be located in the cartons simultaneously down a track with the objects respectively facing opposite to open ends of the cartons located at one side of the conveyor, and a control arm situated in a start position at the other side of the conveyor and having one or more pushers for engaging the objects and pushing them towards and into the open ends of the cartons under control of control mechanism adapted to move the control arm not only across the conveyor, but also down the conveyor at the same speed of movement as the conveyor and to return the control arm back to the start position once the objects have been inserted in to the cartons.

With such an arrangement the pushers are moved by means of the control arm essentially diagonally across the track followed by the conveyor and are then brought back, along the same (diagonal) line, to the start position.

5 Pushers are not carried around with the conveyor as in the previous mechanism.

In the preferred arrangement the pusher arm will carry two to four pushers for engaging respective objects. These pushers are carried by a single control arm so that the  
10 number of relatively moveable parts is kept to a minimum.

Preferably the control mechanism is designed to cause the pusher arm to be raised for the return journey back to the start position. This ensures that there is no fouling with parts of the conveyor or further objects to be moved.

15 A support body can be situated beside the conveyor to support and control the movement of the control arm.

The invention may be performed in various ways and a preferred embodiment thereof will now be described, by way of example, with reference to the accompanying drawings, in  
20 which:-

Figure 1 illustrates a carton filling device of this invention at start position; and

Figures 2 to 4 illustrate sequential operational positions of the carton filling device in use in inserting  
25 objects into cartons.

The device shown in the drawings incorporates a conveyor 1 on which are carried (for example) individual food trays 2 which are to be inserted into open ended



cartons 3. As the conveyor 1 moves (from right to left as shown in Figure 1) the cartons 3 move at the same speed with the conveyor. A robotic support body 4 incorporates a control mechanism arranged to move the support body about  
5 suitable rotational axes so as to cause a control arm 5 to be moved across the conveyor 1. The arm 5 incorporates paddles 6 which engage with the trays 2 so as to push the trays towards the cartons 3.

The arm 5 is moved across the conveyor 1, but at the  
10 same time moves from right to left at the same speed as for the conveyor 1. The diagonal path taken by the arm 5 is indicated by the broken line 7 as shown in Figures 2 and 3. This results in the trays 2 being pushed fully home into the cartons 3. The arm 5 is then raised and brought back along  
15 the reciprocal path 8 (as shown in Figure 4) until the arm returns to and is lowered into the start condition as shown in Figure 1. The same operation can then be employed to move another set of four trays into a subsequent series of four cartons.

20 Paddles could be designed to be disengaged appropriately in instances where it is not practical to load the trays into the carton, such as where there is an oversize product or a badly formed carton. The robotic arm can be fitted with customised gripper attachments to facilitate  
25 stacking or tiering of products prior to loading the products into the cartons. Paddles can incorporate a facility to apply downwards or sideways pressure onto the top of the product to ensure that it enters the carton aperture.

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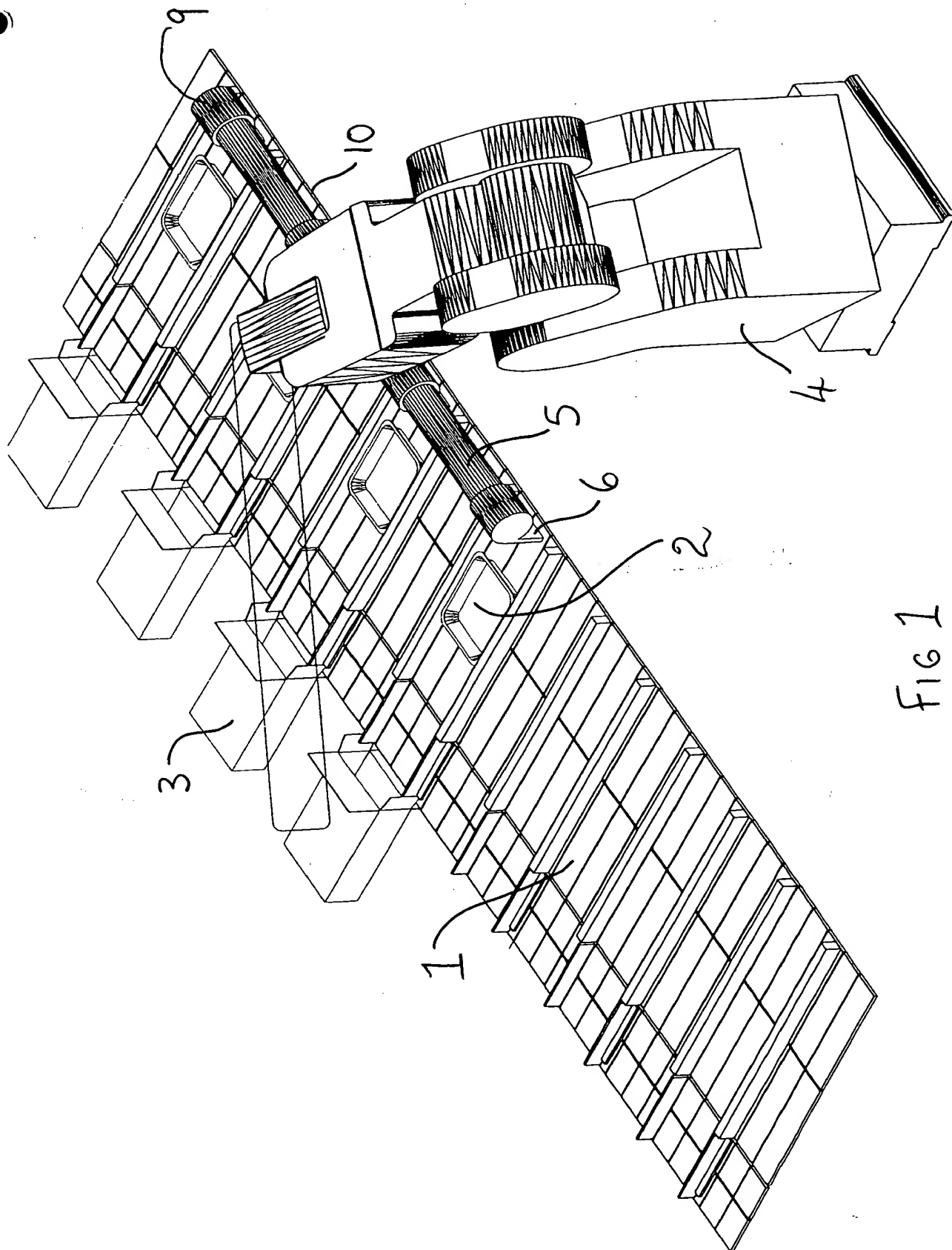


FIG 1

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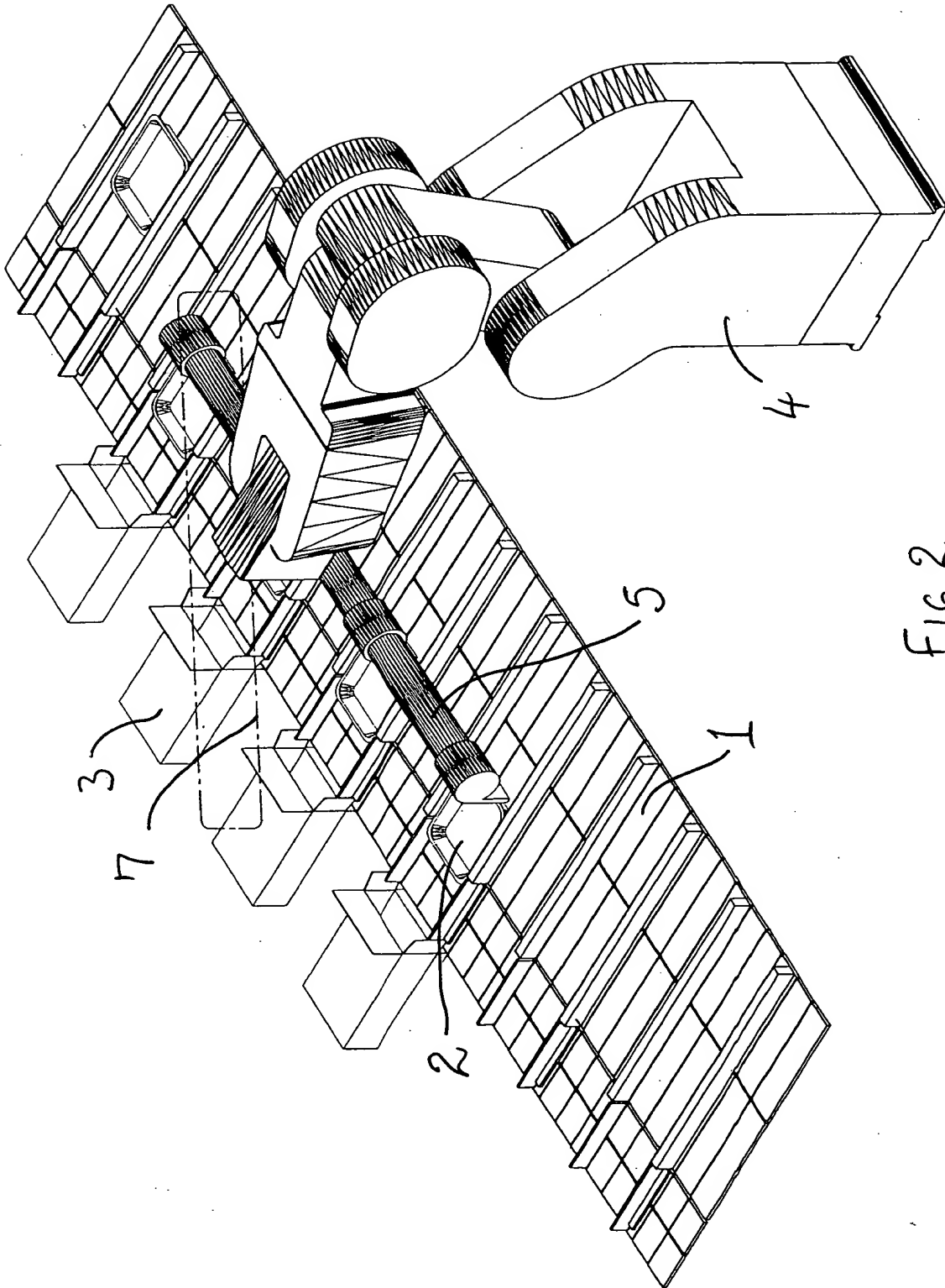


FIG. 2

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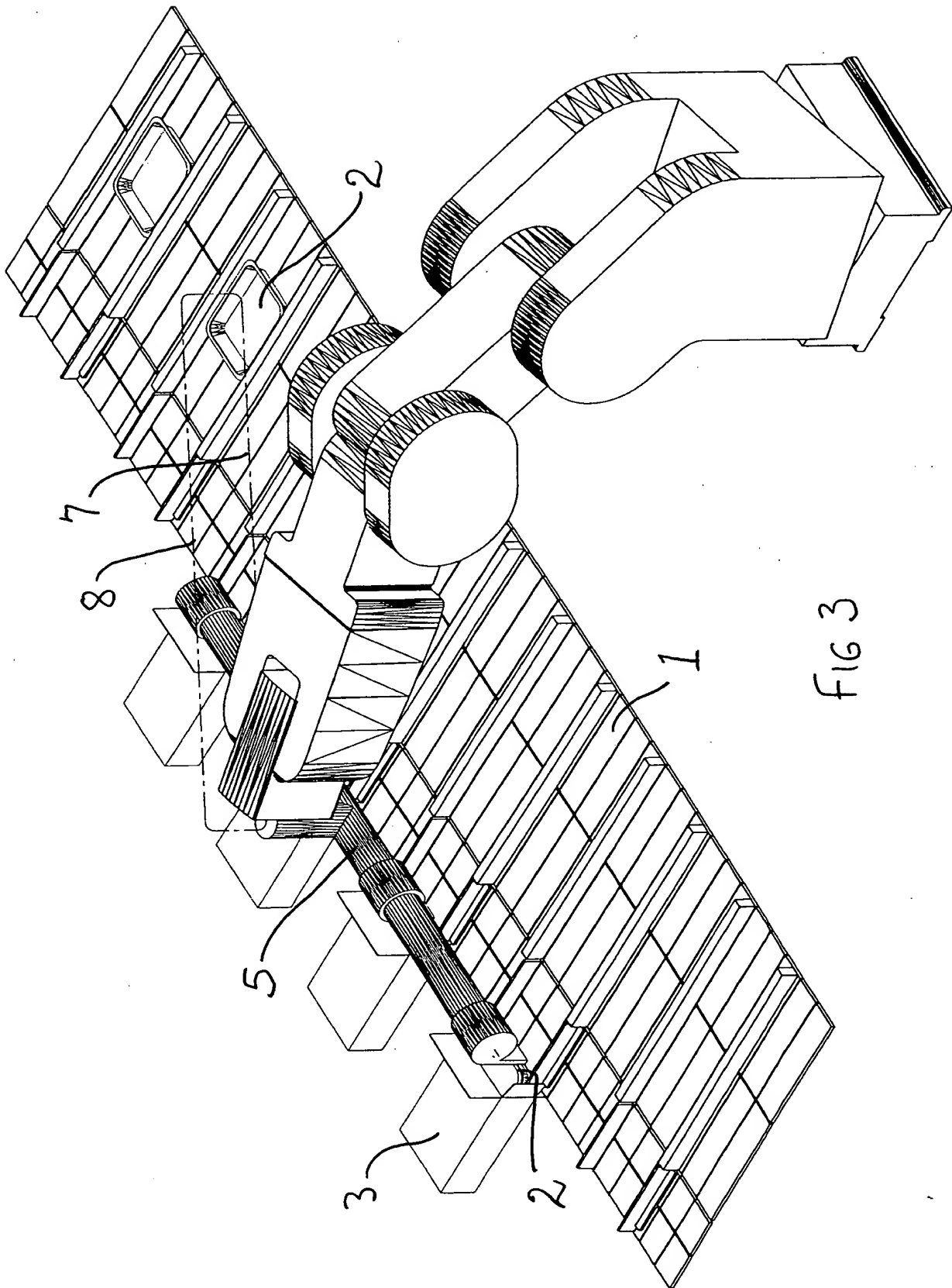


FIG 3

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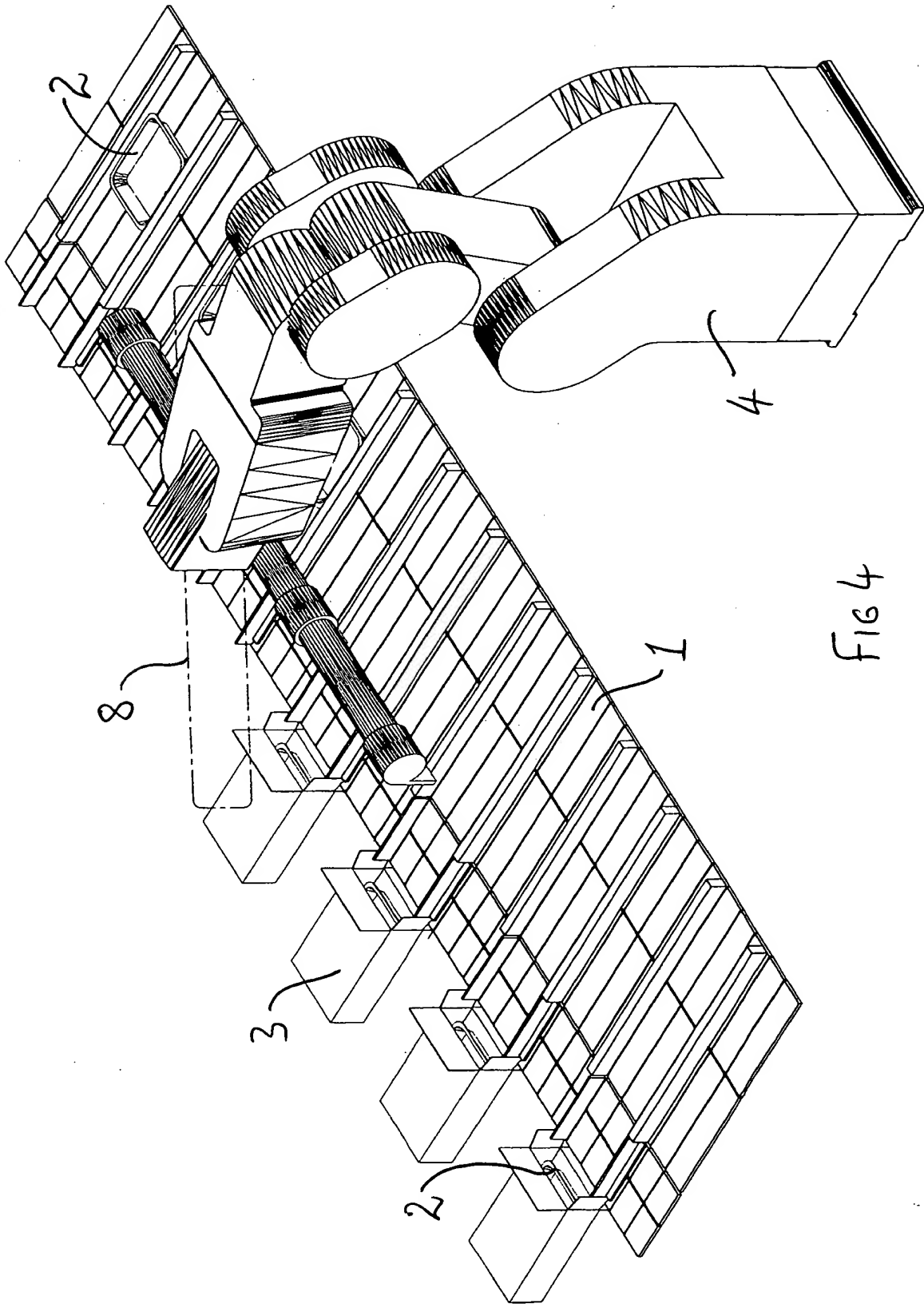


FIG 4

Brian Charles PIKE  
CARTON FILLING DEVICES  
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Docket No.: BDL24  
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